AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1. (Original) In a vehicle having a powertrain system and a brake system, a method of maintaining a vehicle at a substantially zero speed on a graded surface, the method comprising:

determining that the powertrain system is supplying a hold torque, the hold torque having a magnitude sufficient to substantially maintain the vehicle at a substantially zero speed on the graded surface; and

automatically applying a brake torque from the vehicle brake system at a magnitude at least equivalent to the hold torque to thereby maintain the vehicle at the substantially zero speed.

2. (Currently Amended) The method of Claim 1, further comprising:

determining that the powertrain system has supplied the hold torque for a time period; and

executing the step of automatically applying a brake torque based on the time period.

3. (Currently Amended) The method of Claim 2, further comprising:

determining the time period based on ~~that~~ a driver ~~of the vehicle has requested the hold torque from the powertrain system~~ request using an

accelerator pedal.

4. (Original) The method of Claim 3, further comprising:

determining that the accelerator pedal is at least at a predetermined position for at least the time period.

5. (Currently Amended) The method of Claim 2, wherein the powertrain system includes an electric motor, and wherein the method further comprises:

determining the time period based on ~~that~~ the electric motor ~~is~~ being supplied with current having a magnitude substantially equivalent to a stall current ~~for at least the time period~~.

6. (Original) The method of Claim 1, further comprising:

increasing the brake torque from the brake system; and

substantially simultaneously reducing the torque supplied from the powertrain.

7. (Original) The method of Claim 6, wherein:

the brake torque from the brake system is increased to at least the hold torque magnitude at a first rate; and

the torque supplied from the powertrain is reduced at a second rate.

8. (Original) The method of Claim 1, further comprising:

determining that a vehicle driver no longer wants to maintain a substantially zero speed; and

in response to this determination, releasing the brake torque supplied from the vehicle brake system.

9. (Original) The method of Claim 8, wherein the step of determining that a vehicle driver no longer wants to maintain a substantially zero speed comprises:

determining that the vehicle driver has requested the powertrain system supply a movement torque, the movement torque having a magnitude that exceeds the hold torque by at least a predetermined magnitude.

10. (Currently Amended) The method of Claim 9, wherein the step of determining that the vehicle driver has requested the movement torque ~~comprises:~~ is based on ~~determining that~~ an accelerator pedal being ~~is~~ at least at a predetermined position.

11. (Original) The method of Claim 8, wherein the step of determining that a vehicle driver no longer wants to maintain a substantially zero speed comprises:

determining that the vehicle driver has requested the powertrain system supply a roll torque, the roll torque having a magnitude that is at least a

predetermined amount less than the hold torque.

12. (Currently) The method of Claim 11, wherein the step of determining that the vehicle driver has requested the roll torque ~~comprises:~~ is based on ~~determining that~~ an accelerator pedal being ~~is~~ at least at a predetermined position.

13. (Original) The method of Claim 8, wherein the vehicle further includes a transmission, and wherein the step of determining that a vehicle driver no longer wants to maintain a substantially zero speed comprises:

determining that the vehicle driver has placed the vehicle transmission in either (i) neutral or (ii) in a gear that will allow the vehicle to move in a direction opposite that which gravitational force urges the vehicle to move on the graded surface.

14. (Original) The method of Claim 8, further comprising:

reducing the brake torque supplied from the brake system from the hold torque magnitude to a substantially zero magnitude at a first rate; and

increasing the torque supplied from the powertrain system at a second rate.

15. (Original) The method of Claim 1, further comprising:

determining that the vehicle has a substantially zero speed; and

determining that the graded surface has a grade of a predetermined magnitude.

16. (Original) The method of Claim 1, further comprising:

providing an indication to a vehicle driver that the vehicle brake system is applying the brake torque.

17. (Original) The method of Claim 16, wherein the indication is an indicator light.

18. (Original) A control system for maintaining a vehicle at a substantially zero speed on a graded surface, comprising:

a powertrain controller adapted to receive one or more signals representative of vehicle powertrain system status and operable, in response thereto, to (i) determine that the powertrain system is supplying a hold torque and (ii) issue a brake apply request signal in response to the determination, the hold torque having a magnitude sufficient to substantially maintain the vehicle at a substantially zero speed on the graded surface; and

a brake controller coupled to receive the brake apply request signal from the powertrain controller and operable, in response thereto, to issue a vehicle brake apply command to a vehicle brake system to thereby cause the vehicle

brake system to apply a brake torque at a magnitude at least equivalent to the hold torque whereby the vehicle is substantially maintained at the substantially zero speed.

19. (Original) The system of Claim 18, further comprising:

a timer circuit operable to measure a time that the powertrain system has supplied the hold torque,

wherein the powertrain controller is in operable communication with the timer circuit and is further operable to issue the brake apply request signal when the time measured by the timer circuit is at least a first time period.

20. (Original) The system of Claim 19, wherein the powertrain controller is adapted to receive an accelerator position signal representative of a vehicle accelerator pedal position and is further operable, in response thereto, to issue the brake apply request signal when the accelerator position signal has at least at a first predetermined magnitude for the first time period.

21. (Original) The system of Claim 19, wherein the powertrain system includes an electric motor, and wherein the powertrain controller is adapted to receive a signal representative of a current magnitude being supplied to the motor and operable, in response thereto, to issue the brake apply request signal when the current magnitude is at least substantially equivalent to a stall current for the first time period.

22. (Original) The system of Claim 20, wherein:

the vehicle brake command issued by the brake controller causes the brake system to increase the brake torque to at least the hold torque magnitude at a first rate; and

the powertrain controller, in response to the vehicle brake command, causes the powertrain system to decrease the torque supplied therefrom at a second rate.

23. (Original) The system of Claim 20, wherein:

the powertrain controller is further operable, in response to the accelerator position signal having at least a second predetermined magnitude, to issue a brake release request signal; and

the brake controller is further operable, in response to the brake release request signal, to issue a brake release command to the vehicle brake system to thereby cause the vehicle brake system to release the brake torque.

24. (Original) The system of Claim 23, wherein the second predetermined magnitude is greater than the first predetermined magnitude.

25. (Original) The system of Claim 23, wherein the second predetermined magnitude is less than the first predetermined magnitude.

26. (Original) The system of Claim 23, wherein:

the powertrain controller is further operable, in response to the accelerator position signal having at least the second predetermined magnitude, to supply a signal representative of a decreasing hold torque request; and

the brake controller is further operable, in response to the decreasing hold torque request signal, to release the brake torque at a rate.

27. (Original) The system of Claim 18, wherein:

the powertrain controller is adapted to receive a signal representative of vehicle transmission status and is further operable, in response thereto, to issue a brake release request signal when the vehicle transmission signal indicates that the vehicle transmission is moved from a first directional movement status to either (i) a neutral status or (ii) a second directional movement status that is opposite the first directional movement status; and

the brake controller is further operable, in response to the brake release request signal, to issue a brake release command to the vehicle brake system to thereby cause the vehicle brake system to release the brake torque.

28. (Original) The system of Claim 18, further comprising:

a road grade sensor in operable communication with the brake system controller and operable to (i) sense a grade magnitude of the graded surface and (ii) supply a road grade signal representative of the sensed grade magnitude,

wherein the brake system controller is further operable to issue the vehicle

brake apply command if the sensed grade magnitude exceeds a predetermined grade magnitude.

29. (Original) The system of Claim 18, wherein one of the powertrain controller and the brake system controller is further operable to generate an indication signal that the vehicle brake system is applying the brake torque.

30. (Original) The system of Claim 29, further comprising:

an indicator light coupled to receive the indication signal and illuminate upon receipt thereof.

31. (Currently Amended) An automobile, comprising:

a powertrain system including:

an engine operable to supply an engine torque, and

a transmission coupled to receive the engine torque and operable to selectively transmit the received engine torque to one or more vehicle wheels;

a powertrain controller coupled to receive one or more signals representative of vehicle powertrain system status and operable, in response thereto, to (i) determine that the powertrain system is supplying a hold torque and (ii) issue a brake apply request signal in response to the determination, the hold torque having a magnitude sufficient to substantially maintain the vehicle at a substantially zero speed on a ~~the~~ graded surface;

a brake controller coupled to receive the brake apply request signal from

the powertrain controller and operable, in response thereto, to issue a vehicle brake apply command; and

a vehicle brake system coupled to receive the vehicle brake apply command and operable, in response thereto, to apply a brake torque to each vehicle wheel at a magnitude at least equivalent to the hold torque, whereby the vehicle is substantially maintained at the zero speed,

wherein the vehicle brake command issued by the brake controller causes the brake system to increase the brake torque to at least the hold torque magnitude at a first rate; and

wherein the powertrain controller, in response to the vehicle brake command, causes the powertrain system to decrease the torque supplied therefrom at a second rate.